

University of Miami
Rosenstiel School of Marine and Atmospheric Science

Cooking Data in the Southeast:
Recipes for Catching, Cleaning, and Consuming Information
Harvested from the South Atlantic Snapper-Grouper
Economic Data Collection

By

Kristin Mary McClendon

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McClendon, Kristin M

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The following report examines the costs which fishermen holding commercial permits in the south Atlantic snapper-grouper and mackerel fisheries incurred to participate in those fisheries for the calendar years of 2002 and 2003. The two types of data collected to conduct an economic analysis were the variable costs data for each individual fishing trip and the fixed annual expenses data for operating in the fisheries.

This evaluation has been undertaken to gain a better understanding of the economic ramifications, which different changes in management and regulation of the fisheries might have on the individual fisherman as well as the industry as a whole. To achieve this goal, the regulation history is described, the methodology is explained, and results are presented through correlations between vessel lengths, gear types, fishing locations, and crew size. This assessment should help managers make more informed decisions, which consider the small business owner (i.e., permit holder). Any change in the regulation and management of fisheries has an effect on the national, regional, and local economies. This investigation attempts to bring some of these issues to the forefront to aid in the decision-making process.

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INTRODUCTION

The south Atlantic snapper-grouper (SASG) complex is a multispecies fishery that supports important commercial and recreational sectors. Many of the snapper-grouper species, including snappers (*Lutjanidae*), sea basses, hinds, and groupers (*Serranidae*), porgies (*Sparidae*), grunts (*Pomadasyidae*), tilefishes (*Malacanthidae*), triggerfishes (*Balistidae*), wrasses (*Labridae*), and jacks (*Carangidae*) are vulnerable to overfishing because of life history characteristics such as relatively sedentary behavior, slow growth, low natural mortality, and a tendency to aggregate during spawning. Consequently, state and federal regulators have attempted to conserve and rebuild SASG stocks through a variety of mechanisms such as quotas, size and bag limits, seasonal closures, and gear restrictions. Scarcity of economic data has been a problem in the development of regulations for the commercial sector. While data about total pounds landed and total ex-vessel value have been available for some time¹, data describing the profit structure of SASG trips and operations have only been collected since 2002². The main focus of my internship was to validate incoming economic data for the commercial sector.

This report describes my internship duties and presents results from the first two years of the economic survey appended to the Federal Logbook Trip Report Form, which is used by commercial fishermen to report fishing activity in the SASG, mackerel, and shark fisheries, as well as a companion annual expense survey. The population for the economic survey consisted of all federally permitted SASG, mackerel, and shark vessels

¹ Data are maintained by the Office of Fishery Statistics, National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, FL 33149.

² Data are maintained by the Social Sciences Research Group, National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, FL 33149.

in 2001. Approximately one-fifth of this fishing population was randomly selected for the survey based on state and gear stratifications.

INTERNSHIP RESPONSIBILITIES

As an intern working with the Social Science Research Group (SSRG) at the Southeast Fisheries Science Center (SEFSC), my responsibilities varied. I participated in the development and testing of an online data validation system for trip logs and annual expense forms, validated economic data from 2002-04 for both trip and annual expenses, and assisted Dr. Larry Perruso, an economist, in the initial analysis of the trip and annual data. My efforts have contributed to a working paper that summarizes costs and revenues in the fishery and will eventually be submitted to *Marine Fisheries Review*. Additionally, the validated data were used to estimate cost functions that were subsequently employed in the analysis of economic effects related to the implementation of regulations associated with Amendment 13B to the South Atlantic Snapper-Grouper Fishery Management Plan.

One of my primary contributions during my internship was to supervise the transfer of economic data from the logbook program to the SSRG using a newly developed Enhanced Economic Data Collection (EEDC) system and validate the incoming data. This system tracks economic information for trip-level landings in the SASG fishery by collecting information on costs such as bait, ice, fuel, miscellaneous supplies, and labor on a per-trip basis via a trip log form (Appendix 1). Once the fishermen return the forms to the Logbook Program at the SEFSC, they are sent to a facility and scanned into images, which are interpreted by a computer program. The resulting entries are entered into a database using standardized variables, including, but not limited to, fishing gear type, a vessel's permit identification number, and species type. Another purpose of the

EEDC system is to classify all the collected information by using common survey variables set by Fisheries Information Systems national standards for ease of data interpretation and knowledge transfer.

The secure login page of the EEDC (Appendix 2) determines the level to which the user is permitted access. Upon login, managers view the administrator page (Appendix 3) and have the option to perform several checks and reviews of the trip-level data. System administrators maintain usage by managing access rights and viewing activity reports regarding who has logged into the system and the information they have entered, altered, or downloaded.

I also provided usability testing and feedback to the information technology consultants who developed the EEDC, and continued to provide quality assurance testing throughout development and deployment. I suggested additions to aid in the search process for managers to quickly locate information on a particular vessel; to view all trips from a specific date; and to find a particular trip by the corresponding schedule number. I also recommended changes to the language utilized to clarify instructions for managers accessing the trip-level database.

One of the most important features of the EEDC system is the ability to set data thresholds to identify possible misreports. For example, upon scanning, the data may not be interpreted properly due to a response error (e.g., misplacement of a decimal point or poor handwriting). My responsibilities were to review all the trip log reports for 2002-04; ensure that the data in the database matched that on the handwritten form by reviewing the image; make any necessary corrections if the data did not match; and report as to the success of the system for scanning and interpreting the data properly. This

process was performed to determine the level of accuracy of the scanning procedure and ensure the reliability of the data in the database.

In order to verify the information collected, I reviewed every trip log and kept track of the logs previously reviewed. I set the threshold parameters for gallons of fuel from a minimum value of 999997 gallons to a maximum of 999999 gallons (Appendix 4). This large minimum value ensured that every trip log was flagged with a warning and listed for review until visually checked and manually submitted as being accepted with that warning. Once the thresholds were set, I ran the validation program which returned a value for the number of outstanding warnings, number of reviewed warnings, and the number of total trip log files in the system (Appendix 5). When browsing the logbook records, one may view the list by warnings, errors, those reviewed and accepted, and all records in the system (Appendix 6).

Each record was listed by Batch number, which refers to the batch of forms received by the scanning facility. Every trip log was assigned an original schedule number upon its receipt by the Logbook Program, resulting in another manner for the identification of a particular trip. The vessel ID referred to the particular vessel registration number listed upon the permit and identified the boat that undertook a particular trip. Also listed in the records was the error message, which provided a reason that record was flagged along with the value for the flagged error. For my task in verifying each record, the error message always referred to fuel quantity; therefore, the value for the number of gallons of fuel used for that particular trip was listed (Appendix 6).

Another internship duty was to supervise the collection and verification of annual fixed cost data from a yearly survey administered to vessel owners who were selected to

fill out the economic portion of the logbook trip forms (Appendix 7). I was responsible for mailing the annual expense forms as well as entering annual economic data into a Microsoft Access database once the fishermen returned them. I also recorded those that responded and those that did not for each year. I attempted to contact permit holders for whom we did not have updated mailing addresses as well as if there were any questions regarding the legibility or accuracy of the information submitted. I also assisted in creating a brochure to send fishermen of the yearly findings as appreciation for their participation in the program and to share the summary results for their own edification.

The Online Economic Data Collection (OEDC) is an online reporting system for the annual expenses survey. The ability for annual expense submission via the internet should be available to fishermen in 2006. I actively participated in the development, usability³, and system testing⁴ for this online feature with software engineers to improve the clarity of instructions for fishermen (Appendix 8). Once deployed for the fishermen's use, managers will be able to set thresholds for annual data (Appendix 9); identify possible misreports and outliers similar to that for the trip logs; and view all records available by the respondent's name, date submitted, and vessel identification number (Appendix 10).

The remainder of this report describes the SASG commercial sector and presents results from economic analyses that used data validated during my internship. I also present background regulatory information about the SASG fishery. The fourth section

³ Usability is defined as the effectiveness, efficiency, and satisfaction with which users can achieve tasks in a particular environment of a product. High usability means a system is: easy to learn and remember; efficient, visually pleasing and fun to use; and quick to recover from errors. *Source*: The Free On-line Dictionary of Computing, © 1993-2005 Denis Howe

⁴ System testing is the process of exercising a product to identify differences between expected and actual behavior. *Source*: The Free On-line Dictionary of Computing, © 1993-2005 Denis Howe

describes SASG trip-level and annual economic data variables and the sampling methodology employed to collect these data. The fifth section presents a description of the SASG commercial fleet and results of analyses using both the verified trip-level and annual economic data. In the final section, I present a summary of my internship and conclusions from the economic analyses.

SASG REGULATORY ENVIRONMENT⁵

The Magnuson-Stevens Fishery Conservation and Management Act of 1996 set forth policy to protect and properly manage the United States of America's fisheries in order to help stimulate the optimum yields⁶ on a continuous basis. The Magnuson-Stevens Act requires managers to take a precautionary approach toward fishery sustainability by ceasing overfishing, rebuilding exploited fisheries, and minimizing bycatch⁷. Another mandate for managers is to reduce the economic impacts on fishing communities and industry participants for new or modified regulations⁸.

To accomplish this second objective, there are two main reports managers use to derive the anticipated economic results of any proposed regulations. The Regulatory Impact Review (RIR) examines how changes in fishery management policy may affect net economic benefits to society. The RIR primarily focuses on the macroeconomics of society through such aspects as welfare and the fishery's contribution to the national income of the United States. In contrast, the second report, the Regulatory Flexibility Analysis (RFA), focuses on microeconomics by viewing results in the analysis of the

⁵ This section, in part, reproduces work originally done by Larry Perruso and is presented here to enhance the reader's knowledge of the environment faced by the SASG commercial sector.

⁶ Magnuson-Stevens Fisheries Act 16 U.S.C. 1801:104-297(5) & (28).

⁷ Magnuson-Stevens Fisheries Act 16 U.S.C. 1851, 1853.

⁸ Guidelines for Economic Analysis of Fishery Management Actions, Office of Sustainable Fisheries, National Marine Fisheries Service, Silver Spring, Maryland, 20910; 1999, revised 2000.

economic impacts of regulations on individual stakeholders, industry producers, and dependent communities.

The Magnuson-Stevens Act created eight regional fishery management councils to monitor and manage fisheries located in federal waters. Additionally, there are ten National Standards outlined to provide assistance for the management councils. Eight of these standards contain language requiring economic analysis to be done in order to determine the probable effects conservation and management efforts may have on communities reliant upon the affected fisheries.

Presently, the National Marine Fisheries Service (NMFS) and the South Atlantic Fishery Management Council (SAFMC), directed under the Fishery Management Plan (FMP) for the “Snapper Grouper Fishery of the South Atlantic Region,” work in unison to manage the SASG complex. Originally, the SASG FMP established provisions to prevent overfishing by inducing size limits for red snapper, yellowtail snapper, red and Nassau groupers, and black sea bass. However, the two decades following the implementation of the SASG FMP in 1983 have produced thirteen amendments (Appendix 11).

The first amendment in 1989 banned the use of trawl gear for harvesting in the SASG fishery south of Cape Hatteras, North Carolina and north of Cape Canaveral, Florida. The second amendment in 1990 prevented the accumulation or possession of jewfish (i.e., goliath grouper) and further defined and explained the standards for overfishing in the SASG complex. The wreckfish fishery was enacted by Amendment 3 in 1991, and Amendment 4 initiated various restrictions for several species in terms of bycatch restrictions, catch size and bag limits, longline gear, entanglement nets, and fish traps.

Also in 1991, Amendment 5 implemented an Individual Transferable Quota management program for the wreckfish fishery. With the goal of rebuilding the snowy grouper, golden tilefish, speckled hind, Warsaw grouper, misty grouper, and yellowedge grouper stocks, Amendment 6 established quota and bag limits for the aforementioned species and created the “Oculina Experimental Closed Area” in 1993, which was recently extended for another decade through Amendment 13A. In 1994, Amendment 7 created size and bag limits for hogfish and mutton snapper. Amendment 8 in 1997 restricted early entry and participation in the SASG fishery to vessels that were able to prove landings between 1993 and 1996 and held a valid snapper grouper permit from February 11, 1996 to February 11, 1997. An array of minimum size and bag limits were implemented by Amendment 9 for red porgy, black sea bass, greater amberjack, vermillion snapper, gag grouper, and black grouper. This amendment also set forth a restriction that vessels with longline gear may only possess deep water groupers and tilefish. The habitat and non-habitat requirements of the 1996 amendments to the Magnuson-Stevens Act were finally addressed through Amendments 10 and 11, respectively, while in 2002 Amendment 12 set further regulatory limits for red porgy.

The Magnuson-Stevens Act, in addition to Executive Order 12866, the Regulatory Flexibility Act (RFA), and the National Environmental Policy Act (NEPA) have led to the SASG economic data collection project conducted within the jurisdiction of the South Atlantic Fishery Management Council. Executive Order 12866 calls for an economic analysis of costs and benefits to society for every alternate regulatory action considered by the regional fishery management council. Under the RFA, the Small Business Administration solicits an assessment of the impact a proposed rule may have on small

entities (i.e., SASG fishing operations), including short-term economic implications. NEPA requires several different types of economic analyses to assess the impacts of federal actions that may significantly affect individuals or businesses either directly or indirectly involved.

This two part SASG economic data collection is conducted to provide financial information about the commercial fishing fleet in the Atlantic snapper-grouper and mackerel fisheries, which includes the aforementioned fisheries in the federal waters off the coasts of North Carolina, South Carolina, Georgia, and the east coast of Florida including, the Florida Keys. The acquisition of this data will better enable the South Atlantic Council to adopt policies meant to satisfy conservation and management goals while minimizing the economic effects of those policies to those participating in the fishery. Lastly, this information will help facilitate fishery managers to make more informed decisions when considering the economic impacts of various regulation alternatives.

DATA AND SAMPLING METHODOLOGY

As noted above, this effort is a two-part economic data collection. The first part asks for information regarding trip-level operating costs associated with distinct fishing trips for a specific vessel in conjunction with mandatory logbook reporting. The second part collects data about a vessel's fixed operating costs using an annual mail survey. The importance of capturing the individual trip data is due in part to external factors that affect a fisher's decisions on each trip concerning which species to target and, therefore, which gear type to use and where to fish. These decisions may influence trip-level revenues and costs and are reliant upon factors such as season, migration, a particular

species life history, market prices, and changes to regulations. Fishermen are obligated to pay fixed expenses as well. These include, but are not limited to, tackle costs, insurance and loan payments, and docking fees. These types of expenses are usually paid for on a monthly, quarterly, or annual basis; therefore, these data are requested annually during income tax preparation.

TRIP-LEVEL ECONOMIC DATA

There are four main sections on the logbook trip form: vessel, gear, catch, and trip expenses (Appendix 1). This analysis and subsequent results mostly cover the expense section. However, other sections of the Logbook Trip Report Form provide a great deal of information to better comprehend the reasoning behind trip-level expenditure decisions. Therefore, a brief explanation of all sections is beneficial in obtaining a better understanding of the operating costs of vessels participating in the SASG fisheries.

In the vessel section, information is gathered for identification purposes, which may include the name of the captain of the vessel for that particular trip and contact information in the event there are questions regarding the information provided. The fisher provides the date the trip commenced along with the date the catch was unloaded at the dealer. Fishers also list the number of days at sea, the number of crew members, and information regarding the location and to whom the catch was unloaded.

The second section on the log trip form requires the fisher to report on the type of gear or gears used for that particular trip as well as specifics related to that particular gear. For example, hook-and-line gear is defined by the use of a rod and reel, handlines, bandits, and electric reels. Hook-and-line gear is typically associated with a boat that is not moving on its own power, but is either stationary or drifting over a fishing ground. For every “hook-and-line” trip that employs these gears, the fisher is asked to fill in the

number of lines used, the number of hooks used on each line, and the number of hours fished for each trip.

The trap category includes fish traps or fish pots, but excludes lobster and crab traps. The fisher reports on the number of traps used, the number of pulls, the soak time (i.e., the amount of time each trap was in the water), and the mesh size (i.e., the size of the openings in the material that covers the traps). The longline classification includes mid-water or bottom longlines while trolling gear trails a vessel moving under its own power. Diving refers to the use of spearguns, gigs, powerheads, and bangsticks or when species are hand caught while diving. All gear types require specific effort information such as the number of hooks, lines, soak time, and number of divers.

The catch section is the largest section and requires the most diligence. Catch is defined as the pounds of fish caught and sold (i.e., landed). There are seven major species groups listed along with twenty other individual species. There is also room at the end of the form to enter any species caught that is not listed. There are five columns to state the specifics of the catch next to each species listed.

The fisherman enters the number of pounds of fish landed in either gutted or whole form. As a fisherman can use several different types of gear in a single trip, they are requested to specify the type of gear used to catch that particular species. Numeric codes are used to designate the statistical area of the south Atlantic in which the majority of that particular species was caught. The final column represents the price per pound the fishermen received for the catch; however, this column was recently replaced with depth on the 2005 form.

As stated earlier, not every vessel with a snapper-grouper and/or mackerel permit is required to complete the expense section. A sample of permitted vessels is selected to report expense information. The intention is to understand the various expenses fishermen regularly incur to conduct an individual fishing trip. This information assists managers in better understanding the ramifications of increases in costs of inputs such as fuel or bait as well as economic impacts of proposed regulations.

A sampled vessel is asked to list the number of gallons of fuel used during the trip, the price per gallon, and the total amount paid for fuel. The three figures, number of gallons, price per gallon, and total fuel cost should calculate evenly. However, some do not and may be the result of estimations, mathematical mistakes, or single tank fills that are used over multiple trips resulting in double reporting. The fishermen are also asked to record the number of pounds of frozen or dead bait used, the number of live bait, and the total bait cost. The fishermen insert the number of pounds of ice used along with the total ice cost. Another category is utilized for all other trip related supplies (i.e., miscellaneous expenses), including, but not limited to, groceries, gas for dive tanks, and oil.

There is also a question asking whether the owner of the vessel was on board acting as the captain. The final question requests the total amount paid to captain and crew for each particular trip. This amount should represent the trip revenue less the boat share and other associated trip costs. The respondent then indicates whether this amount includes the captain's share by checking a "yes" or "no" box.

ANNUAL FIXED DATA

In an attempt to better understand the economic ramifications of the regulation of fisheries in the south Atlantic snapper-grouper and mackerel fisheries, the NMFS collects data about the costs associated with fishing, owning and maintaining a vessel, and all

other fixed operating costs in addition to the trip-level logbook economic survey. The theory is that the most accurate measure of the economic effects from different regulations can be represented by overall profitability. To this end, permit holders who complete the economic portion of the logbook are requested once per year to also complete annual expense forms which document the fixed operating costs for that year. This information is then used to create statistical models that follow changes in profits as regulations change. The information from all selected vessels is combined to reveal an overview of the fishery as a whole.

Once per year, an annual expense form is sent to the same sample of permitted vessels that are required to fill out the trip expense section on the logbook forms. These forms are usually sent in mid-April to coincide with tax season so as to expedite the fishermen's ability to retrieve all necessary information. A cover letter signed by Nancy Thompson, the Science and Research Director of the SEFSC, explains the purpose of the data collection and expresses gratitude to the participant for their cooperation. Instructions, clarifying the different expense requests and a form to record the expenses, are sent to the selected permit holders with a postage paid return envelope.

A deadline for the returned form is listed for one month after mailing, and in order to keep their permit active, the vessel owner is obligated to comply. Once the deadline has elapsed, those owners who did not respond are sent another form with a reminder notice. During 2002-03, the average response rate was roughly 40% of the total sample size.⁹

⁹ While a 40% response rate for a mail survey is relatively good, it is likely that responses regarding expenses are biased upward. This may be due to the fact that the fishermen making the most profit would be the most concerned with keeping their permit in good standing and therefore may be the most likely to complete and return the surveys.

Once the forms are received, the information is recorded into an Access database listed under the vessel's identification number. A notation is made that the permit holder has responded, and they are removed from future mailings for that calendar year. Names, addresses, and telephone numbers are provided via the permit files. The respondent is contacted to assist in the recording of the information provided when the handwriting on the form is unclear or clarification of a certain figure is necessary. A sample selection is used for three calendar years for consistency and, therefore, many respondents may not be able to be contacted due to a change of address or telephone number.

An internet interface was recently developed to offer fishermen the option to complete the form online. I worked to help troubleshoot and offer usability recommendations and quality assurance for the testing of this online form. I continue to work closely with the software engineers on this project as changes and updates are required or requested. The online version of the form is not expected to be available to users until 2006.

ECONOMIC DATA COLLECTION

The purpose of fishery regulations is to provide necessary biological protection to conserve a particular species from being over-exploited. Therefore, regulations limit the size, number, time, and location for a catch and types of gear a fisherman may use. While such regulations designed to protect fisheries are biologically important, compliance may reduce the overall profitability of commercial fishing.

Traditionally, as regulation changes occurred, the economic loss to the commercial industry was calculated as the expected loss in dockside revenue. While this method provided a good cumulative view of the impacts on the industry as a whole, it failed to provide the detailed economic effects on the profitability of small and large-scale fishing operations. This type of economic detail may only be obtained by comparing the changes

in revenue per unit of fishing effort with the cost of yielding that same amount of effort. These results can offer a great deal of insight to the fishery both in the short-and long-term.

In the short-term, a comparison of the costs and revenues on a per-trip basis could assist managers in ascertaining whether a proposed regulation would make fishing trips unprofitable, not solely from an industry standpoint but also on the individual vessel-level. For the longer-term, a comparison of annual revenue and operating costs may be used to conclude how a proposed regulation may impact a fishing operator's financial stability. As fishermen adjust their activities in response to regulation changes, it is difficult to procure a complete assessment, making the continuous data collection to record fishermen's responses an important function of the economic data collection project.

The consolidation of trip costs with the existing logbook data collection program proved to be the most expedient manner of continuous economic data collection. While there is only one version of the trip reporting form, only a select group is asked to fill out the bottom portion collecting trip expense data in addition to the information about their catch and fishing effort that is required by all participants in the snapper-grouper and mackerel fisheries. The original sample was a 3-year panel of vessels from 2002-04. A new sample was selected in 2005 as the expense section was added to all logbook forms. An addendum to the Logbook Package informs those not selected, that they are not required to complete the trip expense section. Subsequently, a letter is sent to those selected for the sample, requesting them to complete the expense section of the form along with instructions for any necessary clarification. The variable costs considered in

the expense section of the form include questions regarding fuel, bait, ice, and crew shares for each trip. An annual expense questionnaire is sent to the same sample of fishermen asked to report trip data near tax season for the previous calendar year.

Lastly, Amendment 4 of the Snapper-Grouper Fishery Management Plan¹⁰ required fishermen to obtain permits to fish commercially for reef fish in federal waters along the southeast United States' Atlantic coast. In addition to the permits, this amendment also required all permit-carrying fishermen to submit logbooks to chronicle their fishing activities, including reef fish such as snappers and groupers. Amendment 1 to the Fishery Management Plan for Coastal Migratory Pelagic Resources (FMPCMPR) addressed mackerels and obligated fishermen to obtain a permit to commercially fish king mackerel and permitted the collection of other data that may prove useful to the management of the fishery. Amendment 2 of the FMPCMPR required fishermen to obtain permits to commercially fish Spanish mackerel. Under the authority of these two plans and the three amendments, the general reporting requirements of the Logbook Program and the trip expense section may assist in the management of these species by satisfying the goal to collect economic information about the fisheries.

SAMPLING METHODS¹¹

The sample of boat owners chosen to report their economic data consisted of 20% of the eligible boats with snapper-grouper and/or mackerel permits. An eligible boat is

¹⁰ South Atlantic Fishery Management Council. 1991. Amendment 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper-Grouper Fishery of the south Atlantic Region. One Southpark Circle, Southpark Building, Suite 306, Charleston, SC 29407. Amendment 4 was effective on January 1, 1992 (56 Federal Register 56016).

¹¹ Reproduced from working paper by Jim Waters 2001: Southeast Region Logbook Family of Forms: The Collection of Cost and Earnings Data From Commercial Snapper-Grouper and Mackerel Fishermen in U.S. Waters off North Carolina, South Carolina, Georgia and the East Coast of Florida. National Marine Fisheries Service, Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, NC 28516.

defined as any vessel having a permit for the snapper-grouper and/or mackerel fisheries with a primary state of landing along the United States Atlantic coast and not having a permit for swordfish or any reef fish fisheries of the Gulf of Mexico. Once selected, cooperation by the boat owners to provide accurate data is a mandatory requirement to maintain their permits in an active status.

Since this program was recently implemented, there have only been two groups of selected fishermen. The first group was chosen based on the list of active permits as of November 26, 2001 for logbook mailings and data collection beginning the 2002 calendar year. As of that date, there were 5,684 boats with active permits, of which 2,477 had a snapper-grouper and/or mackerel permit. Another 700 boats were removed from the program due to their possession of a Gulf reef fish permit in addition to another 93 boats that held a swordfish permit.

The primary state of landing for each boat is based upon the state where the majority of its collective landings for a consecutive 20 month period occurred. If a boat with a permit did not participate for that period of time and reported their state of homeport to be in the Gulf of Mexico, they were removed from the total sampling pool. Once Gulf of Mexico boats were removed, there remained a total of 1,094 boats with snapper-grouper and/or mackerel permits that primarily landed their catches at ports along the Atlantic coast. Due to other reporting requirements through other logbook programs, another 211 boats were removed to save the owners from the burden of reporting twice.

As a result, the final sampling pool of eligible boats for the economic data collection for the south Atlantic snapper-grouper and mackerel permit holders was 883 boats that reported catches between January 2000 and August 2001 and another 398 boats that did

not report catches during that same period. The boats that reported and failed to report catches were considered as separate sampling strata. A selected group consisting of 20% from each stratum was selected to report economic data regarding their snapper-grouper and mackerel fishing activities culminating in 255 boats.

The 883 boats that reported catches were further stratified by gear for two different reasons. First, the type of gear used causes a great deal of economic variability. These variances relate to the costs of repair, equipment replacement and the methods of harvesting affecting the composition of the catch and therefore the catch revenue. Without this further stratification, infrequently used gear types would not be sampled enough, if at all.

The second reason for considering gear in the sampling is due to regulatory limitations related to gear types. Regulations of gear are generally used to mitigate the negative effects different types of gear can have on marine habitat, the number of bycatch adding to the destruction of other overfished and endangered species, and competition for space in fishing grounds created from users of different kinds of gear. Regulations can also create further competition for limited access to or larger allocations of the total allowable catches of certain species. This occurs when politically outstanding users of the major types of fishing gears have the ability to attempt to reduce the number of users in the fishery that use a less common or particularly efficient types of gear from participating. To help protect the minority, it is especially important to separate by gear type to understand clearly what all parties involved are experiencing economically with regulation changes. For sampling purposes, the gear categories include: vertical lines,

longlines, trolling lines, traps, nets, diving with powerheads, diving without powerheads, and all other gears combined.

The sampling pool was also stratified by state or area due to geographic variances in economic performance within the South Atlantic Council's jurisdiction, which wanted to obtain an accurate representation of their constituents for appropriate decision-making. For instance, snapper-grouper varies geographically in its species composition and distance from shore. In the Carolinas, fishermen catch temperate, mid and deep water species, and the trips often last two or three days due to the fishing grounds lying farther offshore. In contrast, in Florida, including the Florida Keys, trips usually last one day as the fishing grounds are closer to shore. Also, geographic weather variances may affect the accessibility of fishermen in different regions to embark on a fishing trip altogether. For the purposes of this sampling, the geographical areas were defined as North Carolina, South Carolina, Georgia, Northeast Florida (Nassau through Martin counties), southeast Florida (Palm Beach through Dade counties), the Florida Keys (Monroe county), and all other Atlantic states.

This sampling strategy was used to ensure that fishermen from all strata were represented, and while it may take several years of data collection to gain enough information on some of the strata with smaller numbers of fishermen, the cumulative collection will be very beneficial to the Council. Until then, data from multiple areas may be combined when necessary to appropriately interpret the differences among the different types of gear (Waters 2001).

In conclusion, the sample selection that began in 2002 was used to collect variable trip and fixed annual data through the end of 2004, at which time a new sample was compiled

using the same methodology. The next section presents the findings of analyses using the economic data collection for the south Atlantic snapper-grouper and mackerel fisheries for the years 2002 and 2003.

RESULTS

FLEET DYNAMICS

Commercial snapper-grouper vessels in the south Atlantic comprise a mixed fleet that employ different gear types and typically land multiple species (many as bycatch) on each trip. Table 1 lists some important economic information regarding the SASG fleet.¹² In 2003, SASG landings were 6.44 million pounds with an ex-vessel value of \$11.91 million. Trends depict a decline in major revenue and effort variables from 1999-2003. Declines in landings, ex-vessel (dockside) revenue, number of vessels in the fishery, number of permitted vessels, number of trips, and days fished appear to be higher in our sample years of 2002-03. Specifically, SASG revenue declined by \$3.55 million from 1999 to 2003, and average price for all species declined by 8%. The number of vessels with any reported SASG landings dropped from 1,101 in 1999 to 906 in 2003, with the decline in the number of vessels evident in all harvest categories. A majority of these vessels (734 out of 906) operated part-time in 2003.

¹² SAFMC, 2005. Public hearing draft of the Regulatory Amendment Number 7 for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region.

Table 1. The snapper-grouper fishery in the south Atlantic: annual landings, ex-vessel revenue and effort. Data Sources: Southeast logbook (SEFSC, Beaufort Lab, NMFS), Southeast permits database (SERO, NMFS).

Item	1999	2000	2001	2002	2003	2004
Snapper-grouper landings	7,704,007	7,679,823	7,562,215	7,324,660	6,442,148	
Ex-vessel revenue from the snapper-grouper fishery	\$13,996,781	\$14,619,050	\$13,902,225	\$13,521,614	\$11,914,249	
Real ex-vessel revenue in \$2003*	\$15,466,056	\$15,618,643	\$14,436,371	\$13,825,781	\$11,914,249	
Ex-vessel revenue from all landings in the south Atlantic **	\$202,772,265	\$218,251,010	\$175,665,169	\$168,359,567	\$163,863,862	
Ex-vessel revenue from finfish landings in the south Atlantic **	\$59,337,165	\$69,941,863	\$65,211,694	\$62,615,403	\$56,818,354	
Number of trips	17,200	16,241	16,922	16,820	16,176	
Days fished	29,285	28,913	29,567	29,243	27,227	
Average days per trip	1.70	1.78	1.75	1.74	1.68	
Price/lb	\$1.82	\$1.90	\$1.84	\$1.85	\$1.85	
Real price/lb \$2003*	\$2.01	\$2.03	\$1.91	\$1.89	\$1.85	
Number of permitted vessels	1,441	1,341	1,264	1,174	1,123	1,066
Number of vessels with unlimited permits	1,085	1,001	959	907	879	841
Number of vessels landing SASG species	1,101	1,045	981	955	906	
Number of vessels with more than 100 lb of landings	972	920	850	813	773	
Number of vessels with more than 1,000 lb of landings	657	606	585	583	542	
Number of vessels with more than 10,000 lb of landings	199	195	196	200	172	
Number of vessels with more than 50,000 lb of landings	27	26	26	26	20	
Number of dealer permits	239	245	252	246	271	269
Number of processors (snapper-grouper species)***	6	11	9	5	10	
Number of processors (snapper-grouper and unclassified finfish species)***	15	20	17	20	15	

Landings information came from the Southeast logbook. Data from the Gulf of Mexico and other (unknown) states are not included in this table. However, Monroe County data is included. Also, wreckfish landings are not included.

* The CPI was used to adjust these values for inflation.

** Data obtained from the NMFS web site.

*** Summarized from the NMFS Annual Processor Survey.

TRIP-LEVEL ECONOMIC RESULTS

For the analysis of the trip expense information, trips (i.e. observations) were characterized by the primary type of gear from which the plurality of their revenue was derived. For example, vessels that primarily used hook-and-line gear (i.e., handliners) were generally at sea for less than two days, while those that primarily used longlines were out for four to five days on average (Table 2). As a result, longliners generally incurred more expenses and higher revenues than handliners. Additionally, the amount that these dissimilar types of trips spent on inputs such as fuel, ice, and bait were usually quite different. By separating the fleet by gear decisions, we hoped to uncover information concerning the different types of fishing operations and how they might be affected by changes in regulations.

We have chosen to evaluate trip length, vessel length, crew size, and fuel price by examining the mean, standard deviation, and range. These statistics allowed us to gain a general understanding concerning an average trip in each gear category. The mean of a set of numbers is equal to the sum of all the values divided by the number of values in the set. The standard deviation is the measure of variability within each gear category for the variable in question.

The rest of the variables, such as fuel, bait, ice, and other expenses were evaluated by median, minimum, and maximum values. The median is the middle value of a set of numbers when ranked in order from smallest to largest. These calculations are performed since the distributions of these variables are highly skewed. Also, zero expense levels were readily reported when fishermen had implicit ice contracts or caught their own bait. In these cases, reporting the median rather than the mean provided a more accurate representation of an average trip.

Trip revenues were calculated as the product of the quantity of each species landed and the average price of each species. Average monthly prices were calculated from the NMFS Accumulated Landings System. Another variable examined is Net Operating Revenue per Crewday. This variable showed how much money each crew member made each day and was crucial when comparing trips across different gears (e.g. longliners and handliners). The common base of a “crewday” allowed us to compare the economic efficiency of different trips regardless of the scale of operation. Table 2 summarizes the SASG trip-level economic data for 2002-03 based on primary gear stratifications.¹³ The main gear types in the SASG fishery include traps, longlines, hook-and-lines, troll lines, and divers.

¹³ Perruso, Larry and James R. Waters. 2005-Trip-Level Cost Function Estimation for the South Atlantic Snapper-Grouper commercial fishery. NOAA Southeast Fisheries Science Center Social Science Research Group Working Paper Series SEFSC-SSRG-09.

Table 2. Summary of trip-level economic data and effort variables by primary gear for the SASG fishery (2002-03)

GEAR	Hook-and-Line ¹ (n=2,715)			Traps (n=110)			Longline (n=123)		
	Mean	Std. Dev.	Range ³	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Variable									
Daysaway	1.7	1.9	13	1.1	0.3	1	4.6	3.1	12
Crew	1.9	0.9	5	2.4	0.5	1	2.4	0.5	2
Vess. Len. ⁴	28.0	6.0	32	42.6	3.6	23	37.7	8.6	23
Fuel Price ⁵	\$1.43	\$0.31	\$2.28	\$1.21	\$0.18	\$0.93	\$1.09	\$0.18	\$0.64
	Median	Min	Max	Median	Min	Max	Median	Min	Max
Revenue	\$218	\$3	\$12,414	\$1,485	\$100	\$5,450	\$1,658	\$37	\$15,386
Fuel exp. ⁶	\$28	\$2	\$650	\$172	\$63	\$480	\$295	\$18	\$950
Bait exp.	\$15	\$0	\$700	\$104	\$10	\$360	\$293	\$0	\$1,845
Ice exp.	\$0	\$0	\$256	\$0	\$0	\$80	\$85	\$0	\$300
Misc. Exp. ⁷	\$0	\$0	\$3,373	\$20	\$0	\$700	\$200	\$0	\$2,052
Net Oper. Rev. ⁸ per Crewday	\$82	-\$277	\$2,554	\$383	-\$57	\$2,577	\$155	- \$1,019	\$617

GEAR	Trolling (n=987)			Divers ² (n=161)		
	Mean	Std. Dev.	Range	Mean	Std. Dev.	Range
Variable						
Daysaway	1.0	0.2	2	1.1	0.6	4
Crew	1.3	0.6	4	2.1	0.6	4
Vess. Len. ⁴	28.1	5.5	38	26.5	7.3	30
Fuel Price ⁵	\$1.37	\$0.22	\$1.05	\$1.55	\$0.26	\$1.05
	Median	Min	Max	Median	Min	Max
Revenue	\$183	\$2	\$3,931	\$252	\$8	\$7,137
Fuel exp. ⁶	\$32	\$4	\$422	\$41	\$6	\$246
Bait exp.	\$5	\$0	\$225	\$0	\$0	\$260
Ice exp.	\$0	\$0	\$50	\$0	\$0	\$110
Misc. Exp. ⁷	\$0	\$0	\$325	\$10	\$0	\$210
Net Oper. Rev. ⁸ per Crewday	\$104	-\$145	\$2,323	\$94	-\$43	\$610

¹ This category includes the following gears: rods and reels; handlines; and electric and bandit reels.

² 25% of these trips utilized an explosive device.

³ The range is the difference between the maximum and minimum observations for each variable.

⁴ Mean vessel length is weighted by each vessel's number of trips.

⁵ Fuel prices are not adjusted for inflation.

⁶ This figure does not include oil expense.

⁷ This includes other trip-related expenditures, such as groceries, oil and other lubricants, gas for dive tanks, packing fees and other costs that are typically incurred during a trip.

⁸ Net operating revenues are defined as gross trip revenues minus variable trip expenses excluding labor (i.e., fuel, bait, ice, and miscellaneous expenses) while crewday is defined as the product of days fished and number of crew.

Hook-and-Line Sector

Hook-and-line fishermen comprised the largest group in the sample, consisting of 2,715 individual trips from 2002-03. This category included any trip where the plurality of trip revenue was generated from using rods and reels, handlines, and/or electric and bandit reels. While the average trip in the hook-and-line category was 1.7 days, there was a range of 13 days between the shortest and longest trip with a standard deviation of 1.9 days. There was also a 32 foot range between the shortest and longest boats which may be related to trip duration. The average crew size for these trips was 1.9 with a range of 5 recorded for this sample. Hook-and-line fishermen spent \$1.43 per gallon on average for fuel each trip with a \$.31 standard deviation and a substantial range of \$2.28 per gallon.

Total revenue for hook-and-line trips ranged from \$3 to over \$12,000 with a median of \$218. Fuel expenses ranged from \$2 to \$650 with a middle value of \$28. Hook-and-line trips experienced the second largest range for bait. While some fishermen spent nothing on bait others reported bait outlays up to \$700 for a single trip. The same holds true for ice, since hook-and-line fishermen have the second largest range with many trips reporting zero ice expenses; others up to \$256. These figures may be misleading, however, as some fishermen might have a deal with a fish house in which they received ice for free before departure, but received less compensation per pound of fish upon landing. Furthermore, hook-and-line fishermen might have caught their own bait and not reported any bait expenses; however, "time is money." Miscellaneous expenses varied greatly as well with a \$0 median, \$0 minimum, and \$3,373 maximum. This meant at least 50% of the sample did not spend any money on miscellaneous expenses. This made

sense because the average trip tended to be an owner-operated day trip, and most fishermen would not have had to pay much money for food or other miscellaneous items.

The median value of Net Operating Revenue per Crewday was \$82 with a minimum value of -\$277 and a maximum value of \$2,554. These figures indicated that 50% of the hook-and-line trips yielded \$82 or less daily for each fisherman.

Trap Sector

Trap (i.e., pot) fishing refers to fish traps or fish pots, but not lobster or crab traps. Pots are typically used in the Carolinas. Ninety-eight percent of trap landings are Black Sea Bass, while the remaining 2% are mainly comprised of octopuses and grunts. Out of 110 trips in the sample for trap fishermen, the average trip was 1.1 days with a .3 standard deviation and a range of 1. The crew size was 2.4 with a .5 standard deviation and a range of 1. The average vessel length was 42.6 feet with a standard deviation of 3.6 and a range of 23 feet. This was the greatest average vessel length of all gear types due to the need for greater surface area to store the pots. The mean fuel price trap fishermen paid per gallon was \$1.21 with a standard deviation of \$.018 and a range of \$0.93. The low standard deviations and ranges for the effort variables indicate trap trips were relatively homogeneous operations.

The median fuel expense for trap fishermen was \$172, much greater than that for hook-and-line fishermen even though they tended to be at sea for a shorter time period. This was a result of the need for trap fishermen to travel to various spots to set the pots and then retrieve them later. The minimum amount paid for fuel per trip was \$63 with a maximum of \$480. Bait prices per trap trip were \$104, although some trips spent as little as \$10 or as much as \$360. This range was most likely dependent upon how many traps

were used during a trip and how many times those traps were hauled in and out of the water. On average, trap fishermen did not pay for ice, though when they did the most paid per trip was \$80. Median miscellaneous trip expenses were \$20, with a minimum of \$0 and maximum of \$700.

Trap fishing in 2002-03 seemed to have been the most lucrative type of fishing in terms of the Net Operating Revenues per Crewday. The typical crewmember of a trap trip earned \$383 per day. The least amount earned was -\$57, and the most a single crewmember made during a day for a single trap fishing trip was \$2,577.

Longline Sector

Based on 123 trips in 2002-03, a typical longline fishing trip lasted about 4.6 days long with a standard deviation of 3.1 days and a range of 12 days. On average, the crew size was 2.4 individuals with a standard deviation of .5 and a range of only 2. The mean vessel length for longline trips was shorter than trap vessels with only 37.7 feet, they varied 8.6 feet in length, and ranged 23 feet. On average, longline fishermen paid \$1.09 per gallon of fuel, with a standard deviation of \$0.18 and a range of \$0.64 per gallon. Longliners on average paid less than trap fishermen for fuel.

Longline trips on average spent \$295 on fuel per trip, as little as \$18 and as much as \$950. While bait is an important element to successful longline fishing, some fishermen did not pay anything for bait. The median price paid by longline fishermen for bait was \$293, and the most paid was \$1,845. The minimum spent on ice was \$0 with a maximum of \$300. The median amount spent on ice for longline trips was \$85. Miscellaneous expenses for longliners were typically much more than hook-and-line or trap fishermen,

probably due to the length of the average trip. Longline fishermen on average spent \$200 on miscellaneous expenses, though paid as little as \$0 and as much as \$2,052.

Longline trips resulted in the most revenue of all fishing types with a median of \$1,658, as little as \$37, and as much as \$15,386. Despite the possibility of high revenues for individual longline fishing trips, the Net Operating Revenues per Crewday were lower than trap fishing. Commonly, an individual crew member made \$155 per day, with a minimum of -\$1,019, and a maximum of \$617. These figures suggest that longline fishing was not as lucrative as trap fishing per crew day in 2002-03, and an unsuccessful trip was potentially very costly.

Trolling Sector

There were 987 trolling trips in 2002-03, making it the second most popular type of fishing in the south Atlantic snapper-grouper and mackerel fisheries for that period of time. The average trip was 1 day long with 1.3 crew members on a 28.1 foot vessel spending \$1.37 per gallon of fuel. There was very little standard deviation among trolling trip variables; as seen by .2 for days fished; .6 in the number of crew; 5.5 feet for vessel length; and \$0.22 for price per gallon of fuel. The average trolling trip ranged in duration by 2 days and 4 crew members; vessel length by 38 feet; and fuel price per gallon by \$1.05.

As trolling trips were generally short, the total expenses for fuel were generally low with a median of \$32 per trip, a minimum of \$4, and maximum of \$422. Bait, ice, and miscellaneous expenses were also low, with the median of all three at \$0 per trolling trip. The maximum expense for bait, ice, and miscellaneous expenses was \$225, \$50, and \$325, respectively. In terms of revenues, a trolling trip earned as much as \$3,931 and as

little as \$2, but typically earned \$183. The Net Operating Revenue per Crewday figures however were as much as \$2,323, as little as -\$145, but were typically about \$104.

Diving Sector

During 2002-03, there were 161 dive trips within the sample group, 25% of which utilized explosive devices. The average trip was 1.1 days long, with a crew of 2.1 individuals, on a vessel 26.5 feet long, and spent \$1.55 per gallon of fuel. The standard deviation for each trip was .6 days; .6 crew members; 7.3 feet in vessel length; and \$0.26 in fuel price per gallon. The ranges for diving trips were 4 days; 4 crew members; 30 feet in vessel length; and \$1.05 in fuel price per gallon. On average, divers paid the most per gallon of fuel than any other type of fishing. This was possibly the result of divers purchasing higher priced fuel from local marinas at departure whereas other types of trips may purchase discounted fuel at fishhouses.

While divers experienced the highest per gallon price on average, their maximum fuel expenses were relatively low at \$246, with a minimum of \$6, and a median of \$41. Similar to trolling expenses, diving expenses were normally low or even \$0 for bait, ice, and miscellaneous expenses with maximum expenses for each at \$260, \$110, and \$210, respectively. However, revenues were generally greater than those of trolling with a median of \$252, minimum of \$8, and a maximum value of \$7,137. Although the Net Operating Revenue per Crewday costs were \$94 at the median, meaning diving trips were typically lower than trolling; the least successful diving trip was not as costly as a similar trolling trip with a minimum of only -\$43. Correspondingly, the most successful diving trip did not yield as much profit per crewday as the most successful trolling trip with a maximum of \$610.

Frequency Counts of Trip-Level Variables

Further analysis of the trip-level economic data by examination of gear-specific frequencies was also revealing as to the possible impacts that may result given changes in regulations. Tables 3, 4, and 5 present results such as the number of trips each year, the time of year the trips occurred, and the primary areas in which SASG and mackerel species were landed. This information may help reveal possible impacts to the industry based on local and seasonal changes by observing the fluctuations in the fishing trends over space and time.

Table 3. The frequency of trips by gear-type in each year, 2002-03

year	Trap Frequency N=110	Troll Frequency N=987	Hook-and-line Frequency N=2,715	Dive Frequency N=161	Longline Frequency N=123
2002	56	528	1350	66	78
2003	54	459	1372	95	46

Out of 110 trap trips recorded in the sample group for 2002-03, there was roughly the same number of trap trips in both years. Trolling and longline trips decreased by 67 and 22 from 2002-03, respectively, while hook-and-line and diving trips increased by 22 and 29, respectively. Were there seasonal fluctuations, spatial or species considerations that may have caused the disparity in fishing trips by gear from 2002 to 2003? The following tables offer some insight but elicit many more questions to be explored in the future.

Table 4. The percentage of trips by gear-type in 2002-03 combined for each calendar month

Month	% Trap trips	% Trolling trips	% Hook-and-line trips	% Dive trips	% Longline trips
January	28.18	14.99	11.02	10.56	6.45
February	18.18	9.12	12.42	7.45	6.45
March	1.82	14.08	13.89	5.59	12.90
April	0	11.14	9.99	3.73	8.87
May	0	9.52	10.69	14.29	4.84
June	0	8.21	7.86	3.73	8.06
July	0	7.09	6.54	10.56	20.16
August	0	7.60	6.69	26.09	15.32
September	9.09	2.63	4.52	6.83	8.87
October	6.36	3.85	6.17	8.70	2.42
November	12.73	4.56	4.96	0.62	3.23
December	23.64	7.19	5.25	1.86	2.42

Table 5. The percentage of trips occurred in each state area by gear-type for 2002-03

State	% Trap trips	% Trolling trips	% Hook-and-line	% Dive trips	% Longline trips
East Coast of Florida	N/A	77.51	34.68	54.66	49.19
Florida Keys					
West Coast of Florida	N/A	7.40	45.04	44.72	4.84
Georgia	N/A	N/A	1.14	N/A	N/A
North Carolina	84.55	15.10	14.33	N/A	16.13
South Carolina	15.45	N/A	4.81	.62	29.03
Virginia	N/A	N/A	N/A	N/A	.81

Table 4 references the time of year different gear-type trips occurred and can assist managers in future assessment by the knowledge of when labor and income might be high and low throughout the industry. This information combined with the location of the landings in Table 5 makes evident where and when money was being made in the industry. Trap fishing primarily occurred during the fall and winter months while trolling and hook-and-line trips usually occurred in the spring from January to May, with the least activity for each in September. Anecdotal evidence suggests that trap vessels may switch to the charter industry during the off months between March and August. About 85% of all reported trap fishing trips landed their catches in North Carolina. Seventy-seven percent of trolling trips primarily landed in the east coast of Florida and the Florida Keys while 35% and 45% of all hook-and-line landings occurred on the east and west coasts of Florida, respectively.

For 2002-03, the occurrence of dive trips peaked in August and comprised 26% of all trips. January and July were highly active for dive trips at 11% in each month, and May experienced over 14% of all dive trips for both years. Over 99% of all dive trips landed their catch on the Florida coasts, including the Florida Keys. Less than 1% of dive trips landed in South Carolina, which might have been a result of water temperature, water currents, and species availability during appropriate diving conditions in the waters off other states. While longline trips landed all year long, they peaked in late summer with high activity in March and April. Forty-nine percent of the landings occurred on the east coast of Florida, with 29% in South Carolina and 16% in North Carolina. As noted above, longline trips were usually longer than any other gear-type trip since they targeted deeper water species and therefore often went out to sea farther to reach those depths.

This might have explained the location of the landings since greater depths are reached much closer to shore on the east coast of Florida as opposed to the Carolinas.

Table 6. Percentage of trips in 2002-03 at sea for 1-12 days listed by gear-type

Days away	% Trap trips	% Trolling trips	% Hook-and-line trips	% Dive trips	% Longline trips
1	89.09	96.86	83.58	96.27	8.06
2	10.91	2.53	3.71	1.86	37.10
3		0.61	2.57	1.86	5.65
4			1.62		4.03
5			2.13		8.06
6			1.80		5.65
7			1.84		8.87
8			0.70		7.26
9			0.81		5.65
10			0.59		7.26
11			0.26		1.61
12			0.18		0.81

Table 7. Percentage of trips in 2003-03 with 1-6 crew members listed by gear-type

CREW	% Trap trips	% Trolling trips	% Hook-and-line trips	% Dive trips	% Longline trips
1	54.55	71.53	35.67	10.56	0.81
2	45.45	24.92	43.17	73.29	59.68
3		2.84	15.36	12.42	39.52
4		0.61	4.81	3.11	
5		0.10	0.92	.62	
6			0.07		

Table 8. Percentage of trips in 2002-03 with the vessel owner aboard listed by gear-type

OWNER ABOARD					
	% Trap trips	% Trolling trips	% Hook-and-line trips	% Dive trips	% Longline trips
Y	97.25	96.93	87.29	94.34	46.34
N	2.75	3.07	12.29	5.66	53.66

Some of the most interesting aspects about tables 6, 7, and 8 include the correlations between days away from port, crew size, gear-type, and whether the vessel owner was aboard. Eighty-nine percent of trap trips went out to sea for a single day. A little more than half of the trips in two years operated with only one crewmember while the other half went out with two crewmembers. Of the 110 trap trips recorded in 2002-03, 97% of them had the owner of the vessel aboard. A total of 987 trolling trips were recorded for the two years, 97% of which were 1 day long, 72% of which had 1 crewmember, and 97% of which included the vessel's owner.

Hook-and-line trips were the most common gear-type with 2,715 trips recorded in the 2002-03 sample. While they were at sea as much as 14 days with a maximum of 6 men per crew, 84% of the trips were 1 day in length. The average crew size for hook-and-line trips varied with 36% of the trips consisting of 1 crewmember, 43% with 2 crewmembers, and approximately 15% with 3 crewmembers. Eighty-seven percent of all hook-and-line trips set forth with the owner of the vessel aboard.

Over 73% of all dive trips in 2002-03 had a crew of 2, and 94% of all the trips were with the owners of the vessels aboard. The sample of 161 dive trips had up to 5

crewmembers. Over 10% of the dive trips had a crew of 1, and 12% set out with 3 crewmembers.

As stated earlier, longline trips were typically of a longer duration than other trips due to the need to access deeper waters. Of 123 trips which lasted up to 12 days, 37% were 2 days long with the rest at about 5% for each additional day up to 10 days. Sixty percent of longline trips had a crew of 2, while the remaining 40% went to sea with 3 crewmembers. Less than 1% of longline trips had only 1 crewmember, as the gear is handled more efficiently with more crewmen. As for the owner being on board for longline trips, the split was almost equal; 46% of longline trips carried the owner, and 54% operated without the owner.

The analysis of frequency tables are of assistance for a multitude of hypotheses to be further explored. It would be interesting to compare the type of gear used and the time of year to determine the cause and effect of those decisions whether they are weather or species driven. Also, when examining the gears used in different months and by locations landed, those figures could be compared by each vessel individually to determine whether vessels fish using a single gear-type and dock other months or whether they are versatile and possibly switch gear and landing sites to follow the catch. The frequency tables offered a visual representative of highs and lows for various categories.

ANNUAL FIXED ECONOMIC RESULTS

The following analysis represents the annual expense reporting for 2002-03. Initially, 278 permit holders comprised this sample (i.e., annual expense mailing list). However, this group was reduced as respondents were removed from the sample as a result of

having sold boats, permits, or were unable to be contacted. There were a total of 101 responses for 2002 and 126 responses for 2003. Despite the reduction of the initial sample size, the increase in the number of responses for 2003 might have been due to a variety of reasons. First, the mailings were sent out more efficiently and timely. Also, the users may have been more familiar with completing this form and thus were more likely to return them the second year. The 2003 forms were clearer due to a change to dollar amount entries as zeros were added to restrict the users from entering cents. For example, in 2002 forms, some respondents failed to list decimal points appropriately resulting in extremely high outliers. It would be interesting to compare the response rates for 2005 and 2006, with a new sample group, to observe if the same trends occur.

Annual Misreports

A total of 19 observations were removed when analyzing this data. The reasons these observations were removed varied, but 7 of the observations were removed due to combined reporting of multiple variables into one single variable. Another discrepancy was notations on forms that made clear the respondent included trip costs for the year in the annual variables. This information was already collected on the trip logbook forms. In these cases, the respondents could not be reached to clarify the appropriate values for each variable and were therefore removed.

Another 6 observations were removed as the forms were returned as “undeliverable,” without a forwarding address or permit file update. The final 6 observations were removed due to misreporting by the failure of the respondent to separate two vessels’ information from one another; the failure to complete one entry on each form without explanation; omitted decimals or additional commas; all of which caused the values

provided to be ambiguous. Again, these respondents were unavailable for clarification and were therefore removed from the sample.

Table 9. Percentage of annual survey respondents that do each type of fishing

	2002 n=89	2003 n=117	2002/2003 n=206
Bottom	72%	69%	70%
Trolling	44%	38%	41%
Charter	21%	20%	20%
Other	26%	22%	24%

The annual expense questionnaire requested the respondent check all types of fishing methods used for the year. The fishing methods offered as choices included Bottom fishing, Trolling, Chartering and another category to capture all other types of fishing, including, but not necessarily limited to, diving and spear fishing. Bottom fishing can include the use of hand-and-lines, longlines, traps, and nets. Trolling refers to trailing lines closer to the surface and charter fishing includes, but is not limited to for-hire boats, such as charter, party, head, and six-pack boats. The results of these responses for 2002-03 are shown in Table 9.

The percentages are based upon the number of responses received. After removing the misreports, there were a total of 89 responses in 2002 and 117 responses in 2003. The values in the above table do not compute to 100% for any column. A vessel owner may use more than one type of fishing method and was asked to check all applicable methods; thus, the choices are not mutually exclusive.

Bottom fishing was the most prominent type of fishing used in the Atlantic snapper-grouper and mackerel fisheries followed by trolling, other and chartering, respectively. There was a slight decrease in all types of fishing in 2002-03 reflected in a 1-6% spread. The two years combined were relatively consistent with the individual years and resulted in a 1-3% spread. Given these slight changes, there is a possibility that regulation

changes between the two years had little effect on the types of individual fishing methods fishermen employed.

Table 10. SASG annual vessel expenses in 2002 dollars n=89

	<u>Mean</u>	<u>StDev</u>	<u>Median</u>	<u>Minimum</u>	<u>Maximum</u>
Tackle	5,099	11,240	1,666	0	70,000
Repair	5,512	8,268	2,456	0	40,000
Gear	3,448	5,457	1,165	0	22,950
Docking	2,660	2,413	2,147	0	12,000
Insurance	2,494	2,845	1,643	0	16,000
Licenses	387	379	250	0	2,000
Boatloan	14,236	33,437	5,161	0	170,000
Taxes	1,737	2,436	690	0	10,000
Office Expenses	1,815	4,122	482	0	25,450
Vehicle Expenses	2,402	2,109	1,636	0	8,800
Other Expenses	2,445	2,778	1,000	0	8,991
Total Fixed	25,089	41,799	10,482	0	307,011
Days Used	92	72	79	0	335
Gross Revenue	42,286	63,058	14,936	0	380,000
Net Revenue	15,971	34,761	3,849	-78,809	175,299
Expenses per Day	291	358	184	19	2,190
Gross Revenue per Day	415	436	233	0	2,000
Net Revenue per Day	113	294	70	-1,051	876

Table 11. SASG annual vessel expenses in 2003 dollars n=117

	<u>Mean</u>	<u>StDev</u>	<u>Median</u>	<u>Minimum</u>	<u>Maximum</u>
Tackle	2,881	4796	1,310	0	36,853
Repair	3,968	6,519	1,591	0	41,000
Gear	3,053	5,204	1,265	0	40,000
Docking	2,237	2,198	1,612	0	11,730
Insurance	2,289	2,049	1,528	0	9,372
Licenses	662	2,016	290	0	18,500
Boat Loan	10,296	9,383	7,019	0	30,000
Taxes	2,799	4,875	852	0	24,000
Office Expenses	1,343	2,800	525	0	13,263
Vehicle Expenses	1,894	1,955	1,039	0	7,369
Other Expenses	3,934	9,531	1,200	0	100,802
Total Fixed Expenses	18,003	22,028	8,802	0	53,000
Days Used	101	82	83	0	365
Gross Revenue	33,387	44,003	12,270	-5,519	202,249
Net Revenue	13,401	29,145	2,426	-28,111	162,087
Expenses per Day	254	338	150	0	2,550
Gross Revenue per Day	323	311	244	0	1,309
Net Revenue per Day	69	325	49	-1,750	948

Table 12. Average annual vessel expenditures for the SASG fleet for 2002-03 n=206

	<u>Mean</u>	<u>StDev</u>	<u>Median</u>	<u>Minimum</u>	<u>Maximum</u>
Tackle	3,924	8,506	1,487	0	70,000
Repair	4,667	7,380	2,019	0	41,000
Gear	3,646	6,205	1,000	0	40,000
Docking	2,432	2,299	1,800	0	12,000
Insurance	2,384	2,439	1,536	0	16,000
Licenses	538	1,519	263	0	18,500
Boat Loan	12,523	25,733	5,716	0	170,000
Taxes	2,268	3,871	750	0	24,000
Office Expenses	1,581	3,520	523	0	25,450
Vehicle Expenses	2,128	2,033	1,345	0	8,800
Other Expenses	3,166	6,909	1,007	0	307,011
Total Fixed Expenses	21,178	32,507	9,700	0	53,000
Days Used	97	78	80	0	365
Gross Revenue	37,455	53,583	14,200	-5,519	380,000
Net Revenue	14,560	31,737	3,172	-78,809	175,299
Expenses per Day	270	347	163	0	2,550
Gross Revenue per Day	363	373	238	0	2,000
Net Revenue per Day	88	311	60	-1,750	948

Tables 10, 11, and 12 show the annual expenses reported by vessel owners participating in the SASG fishery by year. There are several variables representing costs to maintain the commercial operation as well as total revenues and days fished for the year. Tackle expenses include hooks, lines, weights, swivels, and so forth. Repair costs include any repair to gear, electronics, and safety equipment. This does not include costs associated with replacing or purchasing new equipment; those costs are covered in the gear category. Docking, insurance, commercial license, and any boat loan costs are also reported.

As for costs associated with a commercial business, permit holders are asked to report on any business taxes paid out annually. Office expenses include any office-related expenditures that pertain to the operation of that specific vessel, such as legal, telephone, rent, administrative, etc. Vehicle expenses refer to any lease payments, repair, or maintenance costs. Other expenses might include health insurance, business travel, relocation, or any other costs that are annually applied for the operation of the permitted vessel. If a vessel owner owns and manages more than one vessel in the same business, they are required to separate the costs for operating the sampled vessel for reporting purposes.

The vessel owner is asked to report the number of days in the calendar year the permitted vessel was used for commercial purposes. The “gross revenue” is provided by the respondent, and the “net revenue” is calculated from subtracting the total cost of all expenses from the gross revenue. This figure resulted in 51 observations for both 2002-03 in which the net revenue was less than the total amount spent on fixed expenses. This may lead to the exit of those vessels from the industry since staying is cost prohibitive.

The “expenses per day” was equated by dividing the total fixed expenses by the number of days that vessel operated. “Gross revenue per day” and “net revenue per day” were calculated similarly.

Insurance

The evaluation of insurance coverage is important because insurance expense can be quickly decreased or eliminated as operational profits decline. Therefore, a change in the number of insured and the types of insurance they carry may reflect the overall financial stability for individual businesses from year to year. This information in turn might assist managers in better understanding which expenses were cut in order for profits to remain high enough to justify continued participation in the fishery. In other words, insurance information may be a good indicator of the long-term financial health of a fishing fleet.

Maritime insurance has a long history that began in the late 17th century by shipowners who met at Lloyd’s coffee house in London to discuss business. These shipowners decided to relinquish a certain amount of money to a pool that would be utilized to help replace a ship in the event of an accident. By the close of the 18th century, Lloyd’s of London had established enough business to become one of the first modern insurance companies.

Presently, there are two types of insurance available to fishermen. The first is Hull insurance, which provides coverage for the structure of the vessel from any physical damage. The most common Hull insurance claim is due to damage caused by the boat colliding with a submerged object, line, or other unrelated item. The other type of insurance is called Protection and Indemnity (P&I) coverage, which covers the costs the insured may incur from damage to another’s property or body. Similar to automobile

liability insurance, P&I coverage is more expensive than Hull insurance since the claims tend to be greater.

Table 13. Statistics on the Number of Insured Respondents

Year # of obs	<u>2002 n=89</u>	<u>2003 n=117</u>	<u>2002/2003 n=206</u>
# Vessel Insurance Carriers	44	51	95
Mean Insurance Expense per vessel	\$2,494	\$2,289	\$2,384
% Vessels Insured	49%	44%	46%
❖ Hull Carriers	33	39	72
❖ P&I Carriers	36	37	73
❖ Hull Only	1	8	9
❖ P&I Only	4	6	10
% Insured with Hull	75%	76%	76%
% Insured with P&I	82%	73%	73%

The number of insured vessel owners decreased 5% from 2002 to 2003. While this was not a significant decline, a steady trend of such losses could result in very few insured commercial vessels in the south Atlantic. More than one-half of the respondents for either year as well as the two years combined, did not carry any type of insurance. The possibility existed that any major damage to the uninsured respondents due to severe weather events or other damage causing occurrences would have had a drastic impact on whether they would have been able to continue to operate in the fishery.

The cost and nature of Hull insurance in contrast to P&I insurance lent credence to the belief that if individual fishermen could only afford one type, they would carry Hull insurance since it is cheaper. However, P&I insurance claims are much more expensive, so that might have been the wiser investment. I was surprised to learn that on average over the two years, the number of fishermen who carried one type of insurance or the

other, exclusively, was about the same as the percentage of insured that carried either one.

CONCLUSIONS

ECONOMIC DATA DISCUSSION

As directed by the Magnuson-Stevens Act, Executive Order 12866, the RFA, and NEPA, the south Atlantic snapper-grouper (SASG) economic data collection project was created to satisfy calls for economic analysis of costs and benefits to society regarding management of the SASG complex, all the while, paying particular attention to small businesses. The EEDC allows for the transfer of economic data about the SASG complex from the logbook program to the SSRG. The selected sample of vessels with SASG permits completes the economic portion of the mandatory Logbook Trip Report Form. That information is entered into a database for the SSRG to review and analyze. The EEDC collects vessels' trip-level operating expenses such as the costs for fuel, bait, and ice.

Similarly, the OEDC allows SSRG researchers accessibility to review and analyze annual economic data from the same sample of SASG permit holders. In time, the OEDC will allow fishermen to access the system for annual economic data entry. This annual expense survey collects vessels' annual fixed costs including, but not limited to, fees for docking, licenses, and boat loan payments.

This two-part data collection is conducted to examine the overall profitability of participants in the SASG fishery. While it is important to protect biological agents, regulatory compliance may reduce the financial benefits of being a fisherman. The EEDC and OEDC systems grant managers the ability to validate and access the data to aid in the overall analysis. This analysis will assist decision-makers by providing a better understanding of the economic ramifications of fishery regulations. The trip-level data

will lend insight as to how a proposed regulation might make individual fishing trips unprofitable while the annual data allows for an understanding of the long-term financial stability of fishermen and the industry as a whole.

Examination of the trip-level data suggested several interesting hypotheses. Hook-and-line fishing was the most prominent gear-type of trip for 2003-03. This gear-type of trip appeared to be the most versatile despite location or season. Trap trips were limited in location and season.

Throughout the analysis of the data, there were several red flags. However, none of the following inferences were conclusive due to possible inaccurate assumptions, misreporting of data, and the lack of supplementary materials that I, as an intern was not privileged to review. I believe that with further data including, but not limited to; age, other income sources, and fishermen's socio-economic brackets; further conclusions might come to light regarding the susceptibility of fishermen to regulation changes.

However, based on the data supplied, the initial red flags were related to the mandate under the Regulatory Flexibility Act (RFA) as to how different regulatory options proposed by the regional fishery management councils might affect the various small fishermen's firms. All the vessels sampled in the SASG are considered small business and fall into this category.

Therefore, when examining the daily income by the variable "Net Operating Revenue per Crewday" defined within the trip-level results, it becomes clear how irregular and volatile fishermen's incomes were during 2002-03. This is particularly interesting when comparing the seasonality and number of trips. As discussed before, each gear-type is used for more trips in certain months than others.

This information leads me to believe that many fishermen may presently struggle financially and a change in regulation that restricts a certain catch during a certain month may drastically affect the number of days and therefore the income a fisherman is able to earn. This is due to the fact that each vessel is equipped with a certain gear-type ready for catching a certain species and may not possess the financial versatility necessary to switch gear-types and may therefore be forced out of the fishery.

Another red flag when analyzing the data was the number of vessels that operate with the owner on board. This number compared with the crew size reveals a large number of trips, predominantly bottom fishing, which operate commercially on a small scale. As mentioned earlier, 72% of all trolling trips went to sea with a single-man crew and 97% of trolling trips operated with the owner aboard. Under these circumstances, the owner was therefore reliant upon him or herself to generate enough income to produce a successful catch. In the end, the lone fishing operation would also be most vulnerable to economic changes. According to the RFA, economic data collection is necessary to reveal the possible economic impacts of potential regulation changes on small businesses and must therefore be taken into consideration by managers when weighing regulatory options.

It is this type of correlation that will help managers to better understand the true ramifications of industry changes to these small businesses. While there is no guarantee that improved economic data will dictate the management decisions in the SASG, the hopes are that the data will assist managers in making informed decisions when faced with regulation alternatives. It is not an easy task to satisfy the biological needs of the

environment and the economic needs of people but increased knowledge of those interactions will continue to assist in a progressive solution.

INTERNSHIP: LESSONS LEARNED

The opportunity to work with the Southeast Fisheries Science Center has been an invaluable one. The experience has greatly increased my understanding of the dynamic interplay between various stakeholders and the importance of gathering vast amounts of data to provide the most complete account of a fishery as possible. Analyzing the information has helped in my comprehension as to how a change in regulation, while beneficial to the environment, can drastically affect an individual's livelihood. This, in turn, may have a rippling effect throughout the local and national economies as well as local and familial communities. The recognition of the dependent interaction between humans and nature outside of the classroom theories has been my most valuable lesson.

In addition to the conceptual lessons, I am also taking away a great deal of practical experience. I learned basic programming in Statistical Analysis Software (SAS) and advanced computations utilizing Microsoft Excel. I became versed in database creation and management with Microsoft Access. The most beneficial tool I possess after this internship is the importance, patience, and understanding for data validation. I appreciate the importance of the accuracy of data and therefore am grateful for the opportunity to help verify and work with data on the south Atlantic snapper-grouper and mackerel fisheries. The chance to have been able to contemplate the economic data in hopes of providing managers with the ability to weigh the effects on everyone involved has been a terrific learning experience.

I leave the University of Miami and the Southeast Fisheries Science Center a more driven individual with clearer goals and greater motivation. I will use this ambition to continue my studies at the University of Massachusetts's Amherst campus in the Wildlife and Fisheries Department. My area of focus will be to examine the human-wildlife interactions of estuaries and bays while working with the different stakeholders to identify possible conflicts with increased regulations. I look forward in further assisting to find the best possible solutions that satisfy the health of the environment as well as the human beings dependent upon its resources.

REFERENCES

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Trip Log Form

RETAIN THIS COPY FOR YOUR RECORDS

APPENDIX 2

EEDC Login Page



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Economic Data Collection

Welcome to the National Oceanic and Atmospheric Administration fishery economic information collection. Are you at the right website? If you are trying to locate the NOAA Fisheries: Office of Science and Technology – Fisheries Dependent Data, Economic and Socio-cultural data collection programs please click [here](#), otherwise please read on.

The National Marine Fisheries Service wants to improve its information about the economic effects of fishery regulations. As a result, we need to ask for information about the economics of your fishing business. We will treat your information as confidential, and will combine it with information from other fishermen to present an overall view of economics in the fishery.

You should already have received an economic version of the logbook trip reporting form. This form is used to collect information about prices and trip costs such as fuel, ice, bait, food, crew expense and other routine trip expenses. We have chosen to collect information this way because management proposals such as trip limits directly affect the profitability of individual fishing trips.

We also need economic information annually about other expenditures for repair and maintenance, new gear purchases, dockage fees, insurance, office and other expenses that are not paid each trip, but that determine the overall profitability of your fishing business. The enclosed form requests information about your expenditures on these and other items which will be used to help determine the effect of proposed regulations on the overall profitability of fishing. In addition, these data will provide information about the contributions of commercial fishing to local economic activity.

Thank you for your help. Your data will contribute to improved understanding about the economic effects of fisheries management. If you have been submitting information about trip costs on your logbooks, thank you again, and please continue to report these costs. If you did not receive the economic version of the logbooks, please call us at (252) 728-8710 and we will be happy to mail one to you. If you have forgotten to report trip costs, please be aware that we selected our sample to cover fishing activities in many areas and with several gear types. We may end up with important gaps in our knowledge of the fishery if you do not report the costs of owning and operating your boats.

We appreciate your willingness to help us improve our knowledge of your fishing activities. If you have any questions, please contact Jim Waters at (252) 728-8710

If you have general questions or comments about the Economic Data Collection Guidelines, please contact us by email at, edc.support@noaa.gov

USER LOGIN

Registered users may login and begin filling out Economic Data Collection Forms

Email:

Password:

[Login](#)

Forgot your password? Enter your email address above and click [here](#).

Is this your first time here?
Click [here](#) to create a new account.

APPENDIX 3

EEDC Administrator Page

Fishery Economic Information Collection

Dear EDC Admin,

Welcome to the National Oceanic and Atmospheric Administration fishery economic expenditure information collection. Thank you for participating in our annual expenditures statistics program.

To provide annual economic information, please choose the appropriate fishery from the menu on the right.

If you have general questions or comments about the Economic Data Collection Guidelines, please contact us by email at, edc.support@noaa.gov

Paperwork Reduction Act: Public reporting burden for the trip expense and payment annual summary is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing & reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: National Marine Fisheries Service, F/SP1, 1315 East West Highway, Silver Spring MD 20910. Providing the requested information in the trip summary is mandatory for managing the Atlantic tuna fisheries in accordance with the Atlantic Tuna Convention Act (16 U.S.C. 971 et seq.) and the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.). In accordance with NOAA Administrative Order 216-100, it is agency policy not to release confidential information, other than in aggregate form. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. This is an approved information collection under OMB #0648-0373 and expires June 30, 2005.

Note: All data provided are confidential and will be used to determine the effects of existing and proposed management policies on fishery participants. Consistent and accurate reporting is critical for achieving the benefits of conservation and management of fisheries.

ADMINISTRATION

[Logout](#)

Maintain Users

Download Data to Local PC

Activity Reports

VALIDATION THRESHOLDS

[Snapper-Grouper Annual Form](#)

[Snapper-Grouper Logbooks](#)

[HMS Annual Form](#)

[HMS Logbooks](#)

LOGBOOKS IN INTERIM AREA

[Run Snapper-Grouper Validation](#)

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LOGBOOKS IN MASTER AREA

[Run Snapper-Grouper Validation](#)

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ANNUAL FORMS

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APPENDIX 4

Trip Log Threshold Parameters

Validation Rules Template

User: EDC Admin [Main Menu](#) [Logout](#)

Trip (Snapper-Grouper) Logbook Batch

THRESHOLD VALUE PARAMETERS					
Display Order	Line Item	Minimum Value	Maximum Value	Error Message	Status
1	Gallons of fuel used this trip	999997	999999	Fuel Quantity (gallons) appears out of range (0 to 300)	<input checked="" type="checkbox"/> Enabled?
2	Price per gallon	0	999999	Fuel gallon price appears out of range (0 to 9,999)	<input checked="" type="checkbox"/> Enabled?
3	Fuel cost for trip	0	999999	Fuel cost appears out of range (0 to 350)	<input checked="" type="checkbox"/> Enabled?
4	The bait weight in pounds	0	999999	Bait weight appears out of range	<input checked="" type="checkbox"/> Enabled?
5	Bait count	0	999999	Amount of bait appears out of range	<input checked="" type="checkbox"/> Enabled?
6	Trip bait cost	0	999999	Cost of bait appears out of range (0 to 500)	<input checked="" type="checkbox"/> Enabled?
7	Pounds of ice used	0	999999	Pounds of ice appears out of range	<input checked="" type="checkbox"/> Enabled?
8	Cost of ice	0	999999	Cost of ice appears out of range	<input checked="" type="checkbox"/> Enabled?
9	Other trip expenses	0	999999	Other trip expenses appear out of range	<input checked="" type="checkbox"/> Enabled?
10	Shares paid to Captain & Crew	0	999999	Shares paid to Captain & Crew appears out of range	<input checked="" type="checkbox"/> Enabled?

APPENDIX 5

Validation Program Results

Batch Validation

User: EDC Admin [Main Menu](#) [Logout](#)

Snapper-Grouper Logbooks (MASTER DATABASE)

2004 Validation Summary		
Validation Status	Quantity	Examine Records
Number of WARNINGS	2026	Examine
Number of ERRORS	0	
Reviewed/Accepted with WARNINGS	4806	Examine
TOTAL Errors + Warnings + Accepted	6632	Examine

Batch Process		
Last Run Date	Validation Options	Execution
June 16, 2005 04:43 pm	<input type="checkbox"/> Revalidate previously accepted warnings	<input type="button" value="Run Validation"/>

APPENDIX 6

Trip Logs Results List

Economic Data Validation Results						
User: EDC Admin			Main Menu		Logout	
Search:	<input type="text"/>	Order by:	Logbook Key	Include:	Warnings	Messages/Page: 20
Last Run: 21-Jan-2005 11:52:34 AM (2026 validation messages)						
Batch Nbr	Schedule Nbr	Logbook Key	Vessel ID	Value	Error Message	Action
F251A	569293	1434307	FL2373FG	12	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
F251A	569294	1434308	FL2373FG	12	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
F251A	569295	1434309	FL2373FG	12	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
F251A	569296	1434310	FL03855P	20	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
F251A	569297	1434311	FL03855P	15	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
F251A	569299	1434313	FL03855P	20	Fuel Quantity (gallons) appears out of range (0 to 300)	Edit
<< Previous 93 94 95 96 97 98 99 100 101 102						

OMB 00348-0018 Expires 12/31/2008

Boat Registration or Vessel Documentation Number:									
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Please return completed form by **November 1, 2004** to:

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APPENDIX 8

Annual Online Form

VESSEL OWNER INFORMATION	
1	Boat Registration or Vessel Documentation Number: <input type="text"/>
2	Name: <input type="text" value="EDC Admin"/>
3	Phone (999) 999-9999: <input type="text"/>
4	Date Entry Date: 18-Jun-2005
ANNUAL FISHING EXPENDITURES (Please report expenses to the nearest dollar)	
5	Type of Fishing: <input type="checkbox"/> Bottom Fishing <input type="checkbox"/> Trolling <input type="checkbox"/> Chartering <input type="checkbox"/> Other
6	Fuel and Oil Expenses: <input type="text" value="0"/> .00
7	Tackle and Fishing Supplies: (Include hooks, line, dips, weights, and other fishing supplies): <input type="text" value="0"/> .00
8	Bait, Ice, Food, Boats, Gloves, and Other Trip Expenses: <input type="text" value="0"/> .00
9	Payment to Hired Captain and Crew: (Include Shares, Wages, etc.): <input type="text" value="0"/> .00
10	Repair and Maintenance Expenses: (Include hull, engine, gear, electronics, safety equipment, etc.): <input type="text" value="0"/> .00
11	Does The Repair and Maintenance Expenses Include Haulouts (Check for yes)?: <input type="checkbox"/> Yes?
12	Purchases of Gear and Capital: (Include gear, engine, electronics, safety equipment, anchore, etc.): <input type="text" value="0"/> .00
13	Boat Dockage / Rent and Utility Expenses: <input type="text" value="0"/> .00
14	Insurance for Hull and P&I: <input type="text" value="0"/> .00
15	Does The Insurance Include Hull and P&I (Check for yes)?: <input type="checkbox"/> Hull <input type="checkbox"/> P&I
16	Commercial Fishing Licenses and Permits: <input type="text" value="0"/> .00
17	Boat Loan and Business Loan Payments: (or share of business loan payments associated with this vessel): <input type="text" value="0"/> .00
OTHER BUSINESS EXPENSES PAID FOR VESSEL	
18	Business Taxes Paid by Vessel: (Include property and income taxes): <input type="text" value="0"/> .00
19	Office Expenses: (Include rent, accounting, legal, utilities, etc.): <input type="text" value="0"/> .00
20	Car and Truck Expenses: (Include vehicle repair, maintenance, loan payments, lease expenses): <input type="text" value="0"/> .00
21	Other Annual or One-Time-Only Expenditures Paid by Vessel: (Include business travel, health insurance, relocation, etc.): <input type="text" value="0"/> .00
END OF YEAR ACTIVITY REPORT	
22	Number of Days This Vessel Was Used For Commercial Fishing and Charter: <input type="text" value="0"/>
23	Vessel's Annual Gross Revenue From Commercial and Charter Fishing: <input type="text" value="0"/> .00
Information remains editable for 7 days.	
<input type="button" value="Submit"/>	

APPENDIX 9

Annual Threshold Parameters

Validation Rules Template


User: EDC Admin

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Trip (Snapper-Grouper) Annual

THRESHOLD VALUE PARAMETERS					
Display Order	Line Item	Minimum Value	Maximum Value	Error Message	Status
<input type="text" value="1"/>	Fishing supplies	<input type="text" value="0"/>	<input type="text" value="3000"/>	Tackle and Fishing supplies appear out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="2"/>	Insurance	<input type="text" value="0"/>	<input type="text" value="9999"/>	Insurance appears out of range	<input type="checkbox"/> Enabled?
<input type="text" value="3"/>	Cost of fuel	<input type="text" value="0"/>	<input type="text" value="9999"/>	Item 6) Fuel and Oil Expenses appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="4"/>	Crew payment	<input type="text" value="1"/>	<input type="text" value="239999"/>	Crew payment appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="5"/>	Bait supplies	<input type="text" value="0"/>	<input type="text" value="9999"/>	Bait supplies appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="6"/>	Repair maintenance	<input type="text" value="0"/>	<input type="text" value="9999"/>	Repair and maintenance appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="7"/>	Purchase of capital	<input type="text" value="0"/>	<input type="text" value="9999"/>	Purchase of capital appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="8"/>	Boat rent utility	<input type="text" value="0"/>	<input type="text" value="9999"/>	Boat rent appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="9"/>	Commercial Fishing License	<input type="text" value="0"/>	<input type="text" value="9999"/>	Commercial fishing license appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="10"/>	Boat Loan	<input type="text" value="0"/>	<input type="text" value="9999"/>	Boat loan appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="11"/>	Business Tax	<input type="text" value="0"/>	<input type="text" value="9999"/>	Business tax appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="12"/>	Office	<input type="text" value="0"/>	<input type="text" value="9999"/>	Office expense appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="13"/>	Vehicle	<input type="text" value="0"/>	<input type="text" value="9999"/>	Vehicle expense appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="14"/>	Other	<input type="text" value="0"/>	<input type="text" value="9999"/>	Other expense appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="15"/>	Number of days fished	<input type="text" value="0"/>	<input type="text" value="365"/>	Number of days fished appears out of range	<input checked="" type="checkbox"/> Enabled?
<input type="text" value="16"/>	Vessel gross revenue	<input type="text" value="0"/>	<input type="text" value="999999"/>	Vessel gross revenue appears out of range	<input checked="" type="checkbox"/> Enabled?

 Submit

APPENDIX 10

Annual Results List

Economic Data Collection

User: EDC Admin

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Search

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Search:

Order by:

Date Entry Date

New Atlantic Snapper-Grouper

New Highly Migratory Species

Completed Annual Expenditure Forms (28 found)

Vessel ID	Signing Person Name	Date Entry Date	Form Type	Action
MD6398BD	Joe	December 2, 2004	SG	Edit
FL8074CE	Heratio	December 2, 2004	SG	Edit
FL3948AY	Edwin	December 2, 2004	SG	Edit
FL00593L	George	December 2, 2004	SG	Edit
998998	Fisher One	December 1, 2004	SG	Edit
V89877	Caslo Test 57	November 21, 2004	SG	Edit
FL3752KK	Susan Molina	October 22, 2004	SG	Edit
1021070	New Orleans I	October 22, 2004	SG	Edit
FL4265SG	Joseph DeSantis	October 22, 2004	SG	Edit
NC1436CB	Jay O'Leary	October 21, 2004	SG	Edit

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APPENDIX 11

Summary of Amendments to the 1983 Snapper-Grouper FMP

AMENDMENT	YEAR	PURPOSE OF THE LAW	MAJOR ACTION
1	1989	To address habitat damage and growth overfishing problems in the SA trawl fishery.	Prohibited the use of trawl gear in most SA areas; and defined the directed SASG fishery.
2	1990	To eliminate directed fishing pressure on overfished SA Goliath grouper.	Prohibited the harvest or possession of SA Goliath grouper; and defined 'overfishing' for SASG species.
3	1991	To address rapid increases in effort and catch as well as vessel safety issues in the SA wreckfish fishery.	Established a management program for SA wreckfish.
4	1991	To reduce fishing mortality on overfished species; to identify the universe of participating SASG fishermen.	Established restrictions for several SASG species regarding gear, as well as minimum sizes, bag limits, and bycatch restrictions.
5	1991	To establish an ITQ management program for SA wreckfish.	Established an ITQ management program for SA wreckfish.
Regulatory Amendment	1992a	To address unintended economic losses to black sea bass pot fishermen from implementation of Amendment 4.	Modified the definition of a black sea bass pot; and permitted black sea bass participants to make multiple-gear trips and retain incidental catch.
Regulatory Amendment	1992b	To designate 8 SMZs at the sites of artificial reefs off S. Carolina.	Restricted fishing in the SMZs to vertical gear and spearfishing (excluding powerheads).

AMENDMENT	YEAR	PURPOSE OF THE LAW	MAJOR ACTION
6	1993	To rebuild the snowy grouper, golden tilefish, speckled hind, Warsaw grouper, misty grouper, and yellowedge grouper stocks.	Implemented catch quotas, commercial trip limits, and recreational bag limits; and established the <i>Oculina</i> Experimental Closed Area, prohibiting possession of SASG species.
7	1994	To address overfishing of SASG species.	Established size and bag limits for hogfish and mutton snapper.
8	1997	To determine eligibility for trip unlimited transferable SASG permits.	Limited eligibility to vessels that: (1) could demonstrate landings of at least 1000 lbs. from 1993-96; and (2) held a valid SG permit from 2/96-2/97.
9	1998	To protect and conserve SASG species.	Implemented minimum size and bag limits on red porgy, black sea bass, greater amberjack, vermillion snapper, gag grouper, and black grouper; and restricted longliners to possess only deepwater groupers and tilefish.
Emergency Rule	1999a	To protect overfished red porgy resource.	Prohibited the harvest and possession of red porgy.
Emergency Rule	1999b	To address inequities in the permit application process implemented in Amendment 8.	Re-opened the application process for a limited access SASG fishing permit.
10	1998	To address the habitat requirements of the 1996 amendments to the	Identified and designated EFH for species in SASG complex.

AMENDMENT	YEAR	PURPOSE OF THE LAW	MAJOR ACTION
		Magnuson-Stevens Act.	
11	1998	To address the non-habitat requirements of the 1996 amendments to the Magnuson-Stevens Act.	Partially defined SASG stock status determination criteria; and approved 10-year rebuilding schedules for greater amberjack, black sea bass, and red porgy.
12	2000	To institute a plan to rebuild red porgy over 18 years.	Set additional regulatory limits for red porgy.
13a	2003	To extend regulations within the <i>Oculina</i> Experimental Closed Area.	Prohibited fishing for and retention of SASG species for an indefinite period with Council re-evaluation in 10 years.
13b	pending	To address measures that were disapproved in Amendment 11.	Currently addressing measures regarding the stock status determination and rebuilding schedules for all grouper species and red snapper.